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REMARKS:

JUN 22 2007

- 1) In view of the accompanying Request for Continued Examination (RCE), the Final Status of the Office Action of March 22, 2007 shall be withdrawn, and the examination shall be continued on the basis of the present amended claims and remarks.
- 2) The claims have been amended as follows.

Independent claim 1 has been amended to clarify certain features of the invention as supported by the original disclosure at page 2 lines 13 to 17 and page 6 lines 1 to 18.

Claim 17 has been amended into independent form, incorporating the subject matter of prior claims 1 and 17.

Independent claim 20 has been amended to clarify the structure of the inventive insulation arrangement as disclosed in Figs. 1 and 3 and the original disclosure at page 6 lines 1 to 21.

Claim 21 has been amended to more clearly recite the subject matter shown in Figs. 1, 3 and 4.

New added claim 26 depends from claim 20 and is directed to a method of using the insulation arrangement according to claim 20. Thus, if the product claim 20 is ultimately found allowable, then dependent claim 26 directed to a method of using such a patentable product should also be patentable in accordance with MPEP § 821.04 and 2166.01.

New added claim 27 depends from claim 1 and further defines subject matter disclosed in original Figs. 1, 3 and 4.

In view of the abovementioned original disclosure, the claim amendments do not introduce any new matter. Entry and consideration thereof are respectfully requested.

- 3) Referring to the top of page 6 of the Office Action, the indication of allowable subject matter in claims 17 and 18 is appreciated. Claim 17 has been amended into independent form, and should thus now be allowable along with its dependent claim 18.
- 4) Referring to the top of page 2 of the Office Action, the rejection of claims 1, 11, 13, 15, 16 and 19 as anticipated by US Patent 3,904,379 (Oser et al.) is respectfully traversed.

Independent claim 1 has been amended to recite that the insulation arrangement comprises at least one insulation material layer. This makes expressly clear that it cannot be merely air forming an insulation layer, as asserted by the Examiner on page 6 of the Office Action. A person of ordinary skill in the art would not understand an insulation material layer to read on an air gap or layer of air in the arrangement according to Oser et al. For example, Oser et al. make clear that the insulation arrangement is of an all-metal design that achieves an insulating effect due to reflection of heat (see col. 1 lines 5 to 58). That is a very different insulation concept or principle in comparison to a thermal barrier insulation using a layer of insulation material (for example see col. 1 lines 30 to 35 and 50 to 55 of Oser et al.).

Furthermore, present claim 1 recites that the insulation material layer is insertable into the shell formed by the outer sheath and the termination profiles connected thereto. An air gap or a layer of air is not insertable into a shell as presently claimed, but rather always exists in the atmosphere within and outside of the metal sleeve arrangement according to Oser et al.

A person of ordinary skill in the art would thus reasonably understand that the presently claimed "insulation material layer" does not mean a layer of air, and the Oser et al. reference would have given no suggestion or motivation to insert an insulation material layer within an outer shell. To the contrary, Oser et al. teach directly away from inserting or incorporating insulation material layers in the arrangement, because such insulation material layers are expressly described as suffering disadvantages and are also contrary to the all-metal reflective insulation principle of Oser et al. (see col. 1 lines 30 to 58).

Present claim 1 further recites that the outer sheath consist of titanium foil. It is true that Oser et al. disclose the use of titanium sheets to form the all-metal reflective insulation structure (col. 7 line 18). However, such titanium sheets do not correspond with and would not have suggested the presently claimed titanium foil. A "foil" is generally understood to refer to a very thin layer or film of metal, for example "usually less than 0.006 inch (0.15 millimeter) thick" (McGraw-Hill Dictionary of Scientific and Technical Terms, 5th Edition, 1994). As another example, an example embodiment of the invention disclosed in the present specification uses a titanium foil with a thickness of

approximately 0.1 mm (page 5 lines 10 to 11). Such a thin titanium foil would not be suitable for fabricating the reflective metal insulation structure according to Oser et al., due to insufficient strength and stability of the individual layers. To the contrary, the metal sheets according to Oser et al. must be significantly stronger, structurally stable, rigid and thus thicker to fabricate the inner and outer shells that can telescopically slide into one another without crushing or collapsing. In fact, Oser et al. expressly describe the inner and outer shells as being rigid shells (col. 6 line 4). Typical dimensions involve a 36 inch long insulation structure section designed to be mounted on a 10 inch diameter steel pipe (col. 6 lines 48 to 52) while maintaining the intended rigidity. Such an all-metal structure of metal sheets with such dimensions would not have been considered equivalent, comparable or suggestive of titanium foil layers as presently claimed.

The dependent claims are patentably distinguishable over Oser et al. already due to their dependence from claim 1.

For the above reasons, the Examiner is respectfully requested to withdraw the rejection of claims 1, 11, 13, 15, 16 and 19 as anticipated by Oser et al.

- 5) Referring to pages 2 and 3 of the Office Action, the rejection of claims 1, 2, 11 to 16 and 19 as obvious over US Patent 4,287,245 (Kikuchi) in view of Oser et al. is respectfully traversed.

Present amended independent claim 1 recites that the insulation arrangement comprises an outer sheath and first and

second termination profiles connected with first and second end sections of the outer sheath. The outer sheath and the termination profiles connected thereto form a pre-fabricated shell into which an insulation material layer can be inserted. The shell is mountable on a pipe by passing a longitudinal seam of the shell over the pipe. The shell includes the outer sheath connected with the termination profiles before the insulation material layer is inserted therein and before the shell is mounted on the pipe.

These features that have been clarified in amended claim 1 accentuate the basic concept of the invention, that the outer sheath and the termination profiles connected to the end sections thereof form a pre-fabricated shell that can then have the insulation material layer inserted through the longitudinal seam into the shell and can be mounted on the pipe by slipping the pipe through the open longitudinal seam, before the longitudinal seam is closed. Such features of the invention are not disclosed and would not have been made obvious by the prior art.

On page 6 of the Office Action, the Examiner has asserted that the elements 7 and 8 in Fig. 5 of Kikuchi correspond to the presently claimed termination profiles. Actually, however, element 7 is a reinforcing material, and element 8 is a foaming synthetic resin that is reinforced with the reinforcing material 7. Each heat-insulating unit or element (2) is provided with notches respectively at four outer corners thereof so as to form respective recesses from these notches, and then each recess is packed with the reinforcing material (7) and then filled or injected with the foaming synthetic resin (8) (col. 8 lines 62

to 68). The foaming resin thus serves to seal and bond together the heat-insulating elements (2), the reinforcing material (7) and the synthetic resin (8) (col. 9 lines 1 to 6). This final bonding and assembly is only carried out after the insulation (2, 5) and the outer sheath (4) are assembled around the pipe (col. 9 lines 7 to 12).

Thus, it can be clearly understood that the elements 7 and 8 of Kikuchi are only put in place as the last steps in mounting and sealing the insulation arrangement onto the pipe. That is contrary to present claim 1, in which the termination profiles are first pre-connected with the outer sheath to form a shell, before the insulation is inserted into the longitudinal seam of the shell and the shell is mounted onto the pipe. The structure of Kikuchi does not include or suggest such a pre-fabricated shell, and would not have any suitable arrangement allowing the insulation layer to be inserted into such a pre-fabricated shell through a longitudinal seam thereof.

Furthermore, as is evident in Fig. 6 of Kikuchi, the elements 7 and 8 are not and cannot be considered as "termination profiles" because they do not terminate an end of the insulation material (2, 5) and are not profile members. Instead, the elements 7 and 8 are provided only in notches or recesses formed at four corners, without extending all the way around the circumference so as to terminate the end of an insulating unit. In this regard also see present new dependent claim 27, which expressly recites that each termination profile has a circular ring disk shape and is limited longitudinally within the end section of the outer sheath. Contrary thereto, the elements 7

and 8 of Kikuchi do not have a circular ring disk shape, but rather are only provided at two circumferentially limited locations on opposite sides of the pipe, and the elements 7 and 8 extend out of the end sections so as to couple or join and span across two adjacent ends of two successive pipe insulation units.

As further acknowledged by the Examiner, Kikuchi does not disclose the outer sheath consisting of titanium foil. In this regard, the Examiner has cited the Oser et al. patent. However, while Oser et al. disclose the use of a titanium sheet as an alternative to a steel or aluminum sheet, the sheets disclosed by Oser et al. must be understood as being thicker, rigid, and self-stable, so that they do not correspond to a titanium foil, as discussed above. Also, the use of titanium sheets is only disclosed in the context of an all-metal reflective insulation arrangement, but is not suggested for use together with a thermal barrier insulation material layer as in the arrangement of Kikuchi. The teachings of Oser et al. are directly contrary to such a combination (col. 1 lines 10 to 47).

The features of present independent claim 1 have further been distinguished from Oser et al. in the above discussion of the preceding rejection. Those remarks are pertinent here as well.

Thus, even a combined consideration of Oser et al. and Kikuchi would not have suggested or given any apparent reason toward the combination of features of present independent claim 1. The features of claim 1 provide for a pre-fabricated shell including an outer sheath and termination profiles connected to the ends thereof, so that an insulation material

layer can then be inserted through a longitudinal seam into the shell, and the shell can be mounted on a pipe. The references have nothing to do with such a combination and arrangement of components, and thus would not have given any apparent reason for modifications toward the present invention.

The dependent claims are patentably distinguishable over the prior art already due to their dependence from claim 1.

For the above reasons, the Examiner is respectfully requested to withdraw the rejection of claims 1, 2, 11 to 16 and 19 as obvious over Kikuchi in view of Oser et al.

6) Referring to pages 3 to 5 of the Office Action, the rejection of claims 20, 21, 24 and 25 as obvious over Kikuchi in view of Oser et al. and further in view of US Patent 2,919,721 (Isenberg) is respectfully traversed.

Present independent claim 20 has been amended to clarify and expressly recite the structural arrangement and interaction of various components. The insulation arrangement comprises a shell and a layer of thermal insulation material inserted into the shell. The shell includes a cylindrical outer sheath, a metal first termination profile positioned within and connected to a first end section of the outer sheath, and a metal second termination profile positioned within and connected to a second end section of the outer sheath. The termination profiles each respectively have a circular ring disk shape with a limited longitudinal extent in a longitudinal direction, and are spaced apart from one another in the longitudinal direction.

As discussed above, Kikuchi does not disclose termination profiles that have a circular ring disk shape. To the contrary, the elements 7 and 8 of Kikuchi allegedly forming a termination profile are provided only in recesses or notches at circumferentially limited opposite corners of an insulation unit, so that the elements 7 and 8 do not form a circumferentially continuous circular ring disk shape. Therefore, these elements do not form a termination profile that terminates a shell of the insulation arrangement.

Furthermore, present claim 20 recites that these termination profiles are metal termination profiles, whereas the elements 7 and 8 of Kikuchi are a foamable synthetic resin reinforced with woven or non-woven fabric, braids, net-like materials of glass cloth, roving cloth, chopped strand, or other fibrous materials (col. 9 lines 22 to 30). Since Kikuchi expressly requires the foamable synthetic resin to form an adhesive bond and a seal between the ends of adjoining successive insulation units, it is necessary for Kikuchi to provide such a synthetic resin, which would not have suggested or given any apparent reason to instead provide a metal termination profile that would not have achieved the desired adhesive bond and seal.

Also, Kikuchi does not disclose and would not have suggested to provide a shell that includes a titanium foil outer sheath with metal termination profiles connected to respective opposite ends thereof. There is no such complete shell formed or suggested by Kikuchi.

Near the bottom of page 3 of the Office Action, the Examiner still referred to alleged Z-shaped termination profiles "as seen

in figures 3 and 4" of Kikuchi, but that assertion is overcome by applicant's remarks in section 6 on pages 16 to 19 of the prior Response of December 22, 2006, which is incorporated herein by reference and reasserted. The Examiner apparently acknowledges this, because in the new responsive comments on page 6 of the Office Action, the Examiner now refers to elements 7 and 8 in Fig. 5 of Kikuchi which have been addressed above. Furthermore, Figures 3 and 4 of Kikuchi are also not relevant to any sort of termination profile, and especially not metal termination profiles connected to an outer sheath to form a shell.

Oser et al. have further been cited for allegedly suggesting a titanium foil for the outer sheath. As discussed above, Oser et al. do not disclose a titanium foil, but rather a thicker, rigid, self-stable titanium sheet.

The Isenberg patent has further been cited for disclosing fiberglass wool as a pipe insulation, with alleged termination profile (18) that seals and holds the insulation in place. However, the element 18 is a moisture impervious membranous film end closure made of resin to form a plastic film (col. 2 lines 46 to 65). This film is applied by a spraying operation onto the outside of the end of the outer sheath and insulation arrangement (col. 3 lines 17 to 20, and Fig. 1). Thus, such features of Isenberg considered in combination with the other references would NOT have suggested the presently claimed arrangement of metal termination profiles positioned within and connected to end sections of the outer sheath to form a shell into which a layer of thermal insulation material is inserted. Just like the other

references, Isenberg applies the insulation material first, and only thereafter externally applies the end seal closure (18). That is contrary to the present inventive structural arrangement.

Thus, even a combined consideration of all three references would not have given any apparent reason to provide the contrary structural components and arrangement of present claim 20 as discussed above. None of the references provide metal termination profiles with a circular ring disk shape arranged within and connected to end sections of a titanium foil outer sheath to form a shell into which a thermal insulation material layer is inserted.

The dependent claims are patentably distinguishable over the prior art already due to their dependence from claim 20.

For the above reasons, the Examiner is respectfully requested to withdraw the rejection of claims 20, 21, 24 and 25 as obvious over Kikuchi in view of Oser et al. and Isenberg.

7) Referring to page 5 of the Office Action, the rejection of claims 22 and 23 as obvious over Kikuchi in view of Oser et al. and Isenberg, and further in view of US Patent 4,162,093 (Sigmund) is respectfully traversed. Claims 22 and 23 depend from claim 20, which has been discussed above in comparison to Kikuchi, Oser et al. and Isenberg. Claim 22 further recites that the metal termination profiles are connected to the outer sheath by weld joints, and claim 23 recites that the metal termination profiles are not connected to the pipe. In this regard, the Examiner has additionally cited the Sigmund reference for disclosing alleged termination profiles welded to a sleeve or sheath, and not

connected to the pipe itself. In this regard, the Examiner says "such as when the termination profile is painted on the insulation, such is not considered connected to the pipe". It is not clearly understood what the Examiner is referring to, because the Sigmund reference does not seem to disclose anything about a termination profile being "painted" on the insulation. Sigmund does disclose molding an epoxy or polyester ring with fiberglass or nylon mesh reinforcement, or dipping or spraying a rubber-like solution onto such a ring to form a seal (e.g. col. 10 lines 8 to 41 and col. 10 line 66 to col. 11 line 24). However, such teachings have nothing to do with a metal termination profile that is connected to a titanium foil outer sheath but is not connected to the pipe. Sigmund also discloses weld joints to connect successive pipe units, but this is not seen to relate to welding metal termination profiles within end sections of an outer sheath of an insulation arrangement as presently claimed. Moreover, these teachings of Sigmund would not have been applicable to the above-discussed teachings of Kikuchi, Oser et al. and Isenberg, because those references do not use or have an apparent reason for using a metal termination profile arranged within and welded to an end section of an outer sheath as presently claimed. For these reasons, the inventive subject matter of claims 22 and 23 would not have been obvious over the prior art, and the Examiner is respectfully requested to withdraw the rejection of claims 22 and 23.

- 8) New claim 26 is directed to a method of using the insulation arrangement according to claim 20 for thermally insulating a

pipe. Claim 26 recites particular method steps involved in assembling and mounting the insulation arrangement on the pipe. Such method steps are neither disclosed nor would have been suggested by the combination of prior art references. None of the references discloses providing a shell including an outer sheath and termination profiles connected to the ends thereof, then inserting a layer of thermal insulation material through an open longitudinal seam of the shell, and mounting the shell onto the pipe by passing the pipe through the open longitudinal seam, and then closing the longitudinal seam. Even a combination of the references would not have suggested forming such a shell in advance, and only thereafter inserting the insulation material layer into the pre-fabricated shell and mounting it on the pipe.

9) Favorable reconsideration and allowance of the application, including all present claims 1, 2 and 11 to 27, are respectfully requested.

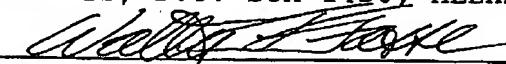
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